

Blue
Work Order ID 71051

Wednesday, June 22, 2011 8:56:57 AM

Page 1

Item ID: D206-642-441

Accept

Setup Start

Revision ID:

Stop

Item Name: Replacement Skidtube

Start Date: 6/21/2011 Start Qty: 1.00

Cust Item ID:

Required Date: 7/8/2011 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2650

Rev F

100

0.00



DC

DOCUMENT CONTROL

Memo

0.00

Document Control

Photocopy bluefile and create labels per PPP D206-642-441 CHG002

N/A

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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110

0.00



Skidtubes

0.00

Skidtubes

Memo

1-Deburr Fwd edge of tube

2-Remove ridge on inside of Fwd edge of tube as per Dwg D2650

3-Weld Fwd Cap as per Dwg D2650. Use aluminum rod. Grind D2647 to fit as required.

A/R ☐ Aluminum Rod ☒

4-Grind weld flush to cap on top surface only.

5-Cut aft end 138.60" from front of tube

6-Drill pilot holes using drill jig DT8025 & DT8169 (A,B,C,D). Open to Ø0.312".

7-Drill holes for wearplates using DT 8028-7. Open to Ø 0.297".

8-Open using #6 Drill Bit

9-Open holes for Tow Ring to Ø0.625" as per Dwg D2650, D2650-7 Drilling Detail

10-Remove inner indexing ridge on aft end of skidtubes as per Dwg D2650

11-Deburr and Blow out all chips from inside the tube

BB 11/06/28

BB 11/06/29

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
115  QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							
116  QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00							
120  HandFinish Hand Finishing	Chemical Conversion Coat per QSI005 4.1 Memo	0.00 0.00							

8 ul64/30

8 ul64/30

1 - 0 SAO 11-06-30

W/O:		WORK ORDER CHANGES					
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Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

DD 11-6-30

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140



Skidtubes

Skidtubes

0.00

Memo

0.00

Skidtubes

1-Open holes to finished size as per Dwg D2650, D2650-7 Drilling Detail
(without cutting fluid)

2-Countersink crossbolt spacer holes as per Dwg D2650(without cutting fluid)

3-Deburr. Blow out chips. Grind alodine off around crossbolt spacer.

4-Bond D2654-7 web in place as per QSI 015Ensure holes line upAllow 12 Hrs.
cure time before cutting☐

Start Date: 11/06/30

Time: 3:05

☐

Finish Date: 11/07/05

Time: 8:00

A/R: Sikaflex-291: 1116945

Sikaflex expiry date: 12/01/15

Dh
11/06/30

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

150

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

1 0 BE 11/07/05

160

Skidtubes

0.00



Skidtubes

Memo

0.00

Skidtubes

1-Prep per QSI 005 and Insert cross bolt spacers D2649. Weld as per QSI 004 and Dwg D2650. Remember to back drill each hole to 0.25" before welding the other side. Use aluminum rod.

A/R Aluminum Rod M112860

2-Grind welds flush as per Dwg D2650.

3-Counterbore 5/16" x 0.750" deep as per Dwg D2650 Deburr

BE 11/07/05
BE 11/07/06

1 0 BE 11/07/05

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170 Skidtubes Skidtubes	HandFinishing Memo Install D2680-041 Nut Plate as per Dwg D2650	0.00 0.00				①			B 11/07/05
180 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00							S 11/07/07
190 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							S 11/07/07

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Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	Pressure Wash per QSI005 4.3	0.00							
	HandFinish	0.00							
Hand Finishing	Memo Brush alodine tube on crossbolt spacer area, do not acid etch, do not dip tube in tank.								
215		0.00							
	SprayPaint	0.00							
Spray Painting	Memo Prime 117319 paint 118395 clear 117984								
225	QC14- Inspect Spray Paint	0.00							
	QC	0.00							
Quality Control	Memo								

1 0 BL 11-7-11.

RT 11-07-20

11 of 21 (1)

W/O:		WORK ORDER CHANGES					
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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	HandFinishing	0.00							
	HandFinish								
Hand Finishing	Memo	0.00							
	1-Install inserts & wearpads as per dwg D2922. Use a drop of Sikaflex inside insert holes before installing wearpad/wearplate.								
	A/R <input type="checkbox"/> Sikaflex-291 <input type="checkbox"/> 1116040								
	Sikaflex expiry date: <input type="checkbox"/> 11108								
	2-Install O-Rings D2651-3 on plugs D2651-1 with Petroleum Jelly and install plugs as per Dwg D2650. Clean excess adhesive								
	3-Install MS27039-4-06 Screw as per DEO 9153								
	4-Inspect for foreign object per QSI 024								
	5-Install D2646 Aft Cap and seal with SikaflexClean excess adhesive								
	A/R <input type="checkbox"/> Sikaflex-291 <input type="checkbox"/> 11116040								
	Sikaflex expiry date: <input type="checkbox"/> 11108								
	6-Wing Walk as per Dwg D2650-7 and QSI 005 4.41								
	Batch: 1117863								

1 0 11 107129

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240  QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00				<u>M</u>	<u>11</u>	<u>07</u>	<u>27</u> ①
250  Packaging Packaging	Packaging Memo Identify and pack for shipping as per PPP D206-642-441 Location: _____ PPP Rev: <u>PPP 71047</u>	0.00 0.00							<u>Call 7/28</u> ①
260  QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							<u>11/7/29</u> ① <u>11-07-28</u> ①

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Wednesday, June 22, 2011 8:56:53 AM

Required Qty: 1.00

D2654-7	Manufactured	No	160	Each	0.0000	1	1
Web			B71310				1

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Picklist Print

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Parent Item: D206-642-441

Parent Item Name: Replacement Skidtube

Start Date: 6/21/2011

Required Date: 7/8/2011

Start Qty: 1.00

Required Qty: 1.00

CCR264SS3-3

Purchased

No

170

Each

569.0000

2



Cherry Rivet



2

BE 11/07/05

Location

Loc Qty

Loc Code

FP-B

2

113973

2

ST311

567

117086

71

117849

496

D2649

Manufactured

No

170

Each

111.0000

23



Cross Bolt Spacer



23

BE 11/07/05
71355 / 23

Location

Loc Qty

Loc Code

LG

99

68224

2

70394

97

LG001

12

65317

1

68507

11

D2680-041

Manufactured

No

170

Each

30.0000

1



Nut Plate



1

BE 11/07/05

Location

Loc Qty

Loc Code

ST020

30

55366

17

70088

13

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Start Date: 6/21/2011

Required Date: 7/8/2011

Start Qty: 1.00

Required Qty: 1.00

ALS4-1032-130 Purchased No

230 Each 1,456.000 60 60



ll 11/07/26

Insert

Location

Loc Qty

Loc Code

ST281

8

1118386

x60

117331

8

ST282

1448

117717

1448

AN960JD10L NAS1149D0332J Purchased No

230 Each 0.0000 2 2



1117087 (x2) ll 11/07/26

Washer

AN960JD416 NAS1149D0463J Purchased No

230 Each 0.0000 1 1



1116805 (x1) ll 11/07/26

Washer

CR3212-4-03 Purchased No

230 Each 1,216.000 2 2



(2) ll 11/07/05

Cherry Rivet

Location

Loc Qty

Loc Code

FP-B

2

110139

2

ST311

1214

114859

1214

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Start Date: 6/21/2011


Required Date: 7/8/2011

Start Qty: 1.00


Required Qty: 1.00

D2651-1 Manufactured No 230 Each 251.0000 22 22

 Plug


Location	Loc Qty	Loc Code
fpa	109	B71037
69018	109	
FP-A	142	
57869	1	
66445	10	
67760	97	
70827	30	
70839	4	

 u 11/07/26


x22

D2651-3 Manufactured No 230 Each 536.0000 22 22

 O-Ring


Location	Loc Qty	Loc Code
FP-A	536	
61962	104	
<u>66956</u>	432	

 u 11/07/26

x22

D3535-15 Manufactured No 230 Each 27.0000 1 1

 Wearshoe

Location	Loc Qty	Loc Code
FP018	27	
66558	7	
<u>68358</u>	6	
69931	14	

 u 11/07/26

x1

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Start Date: 6/21/2011



Required Date: 7/8/2011

Start Qty: 1.00



Required Qty: 1.00

D3535-23	Manufactured	No	230	Each	20.0000	1	1
							<u>xl 11/07/26</u>
Wearshoe							



<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP021	20	
66236	-1	
67594	8	
<u>68342</u>	13	

D3535-37	Manufactured	No	230	Each	3.0000	1	1
							<u>xl 11/07/26</u>
Wearshoe							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP018	3	
67612	3	
		B 71668
		17.0000

D3536-15	Manufactured	No	230	Each	17.0000	1	1
							<u>xl 11/07/26</u>
Gasket							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP011	17	
<u>66559</u>	17	

D3536-23	Manufactured	No	230	Each	39.0000	1	1
							<u>xl 11/07/26</u>
Gasket							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP011	39	
43406	1	
66560	12	
<u>69902</u>	26	

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Shop Packet Print

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Wednesday, June 22, 2011 8:56:54 AM

Page 6

Work Order ID: 71051

Parent Item: D206-642-441

Parent Item Name: Replacement Skidtube

Start Date: 6/21/2011

Required Date: 7/8/2011

Start Qty: 1.00

Required Qty: 1.00

D3536-37	Manufactured	No	230	Each	16.0000	1	1
							<u>HL 11/07/26</u>
Gasket							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP012	16	
63237	4	
<u>66823</u>	12	<u>XL</u>

D3537-1	Manufactured	No	230	Each	7.0000	6	6
							<u>HL 11/07/26</u>
Wearpad							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP017	7	
69817	7	<u>1370972</u>

D3537-3	Manufactured	No	230	Each	9.0000	1	1
*							<u>HL 11/07/26</u>
Wearpad							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP017	1	
35697	1	
FP19	8	<u>1370481</u>
69292	8	<u>XL</u>

MS27039-1-08	Purchased	No	230	Each	744.0000	2	2
							<u>HL 11/07/26</u>
Screw							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

ST291	744	
<u>115108</u>	444	<u>XL</u>
117423	300	

Wednesday, June 22, 2011 8:56:54 AM

Shop Packet Print

Page 6

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Wednesday, June 22, 2011 8:56:54 AM

Page 7

Work Order ID: 71051

Parent Item: D206-642-441

Parent Item Name: Replacement Skidtube

Start Date: 6/21/2011

Required Date: 7/8/2011

Start Qty: 1.00

Required Qty: 1.00

MS27039-4-06

Purchased

No

230

Each

57.0000

1

1



Screw



all 6/27/26

Location

Loc Qty

Loc Code

FP-A

23

115460

23

x1

ST292

34

115460

34

MS27039C1-08

Purchased

No

230

Each

1,304.000

60

60



SCREW



all 6/27/26

Location

Loc Qty

Loc Code

FP-A

1

116022

1

ST293

1303

116373

3

117291

800

118077

500

x56

424

NAS1149C0332R

Purchased

No

230

Each

1,582.000

60

60



Washer



all 6/27/26

Location

Loc Qty

Loc Code

FP-B

15

117291

15

ST297

1567

116304

55

117460

292

117887

820

118078

400

118306

x66

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

QTY -1	QTY -3	QTY -5	QTY -7	PART NUMBER	DESCRIPTION
X				D2650-1	SKIDTUBE ASSEMBLY
	X			D2650-3	SKIDTUBE ASSEMBLY
		X		D2650-5	SKIDTUBE ASSEMBLY
			X	D2650-7	SKIDTUBE ASSEMBLY
1	1	1	1	D2600-1-160	EXTRUSION
1				D2654-1	WEB
	1			D2654-3	WEB
		1		D2654-5	WEB
			1	D2654-7	WEB
1	1	1	1	D2646	AFT CAP
1	1	1	1	D2647	CAP
17	18	19	23	D2649	CROSS BOLT SPACER
16	18	14	22	D2651-1	PLUG
16	18	14	22	D2651-3	O-RING
1	1	1	1	D2680-041	NUT PLATE
2	2			D3286-1	DOUBLER
2	2			D3286-3	STUD
42	44	54	60	ALS7-1032-130	INSERT (or AKS4-1032-130, ALS4-1032-130, ALS7-1032-130)
2	2	2	2	AN960JD10L	WASHER
2	2	2	2	CCR264SS3-3	RIVET
2	2	2	2	CR3212-4-03	RIVET
2	2	2	2	MS27039-1-08	SCREW
1	1	1	1	MS27039-4-06	SCREW
1	1	1	1	AN960JD416	WASHER
52	52			CR3212-4-04	RIVET

F

F

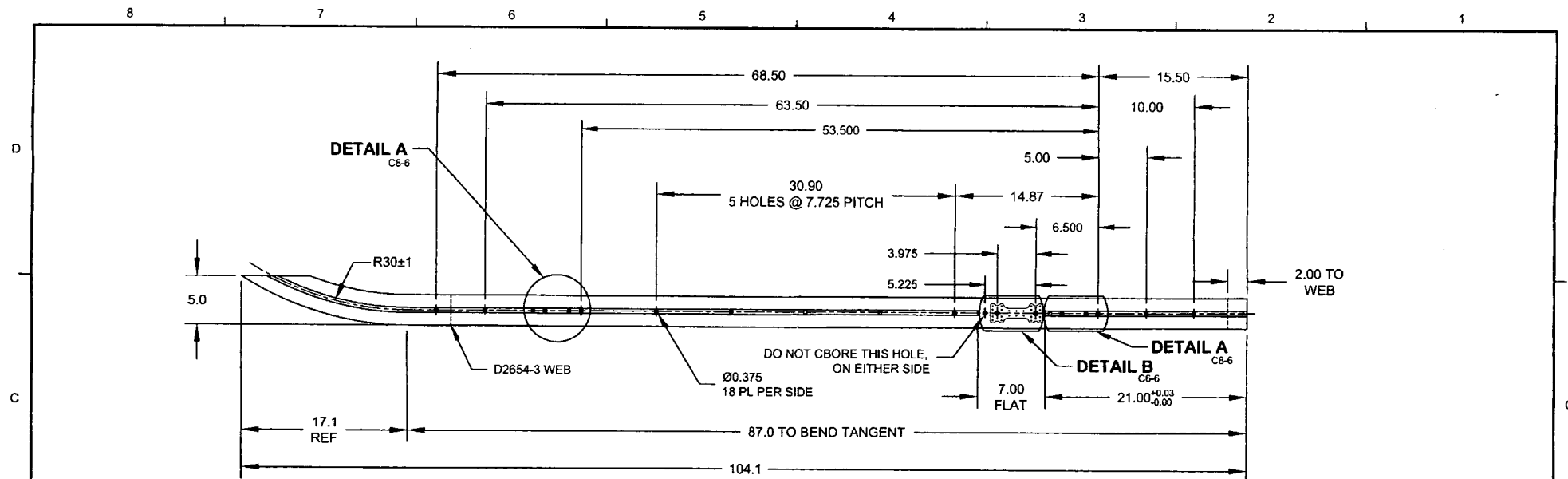
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: -CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
-POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
-BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) WELD PER DART QSI 004
- 9) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020 DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 10) BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015
- 11) INSERT D2651-1 PLUG C/W D2651-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE)
- 12) DRILL Ø0.297 FOR ALS7-1032-130 INSERTS USING TEMPLATE DT8056-1 ON -1 TUBE, DT8056-3 ON -3 TUBE, DT8056-5 ON -5 TUBE, AND DT8056-7 ON -7 TUBE. INSTALL INSERTS AFTER FINISH.
- 13) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

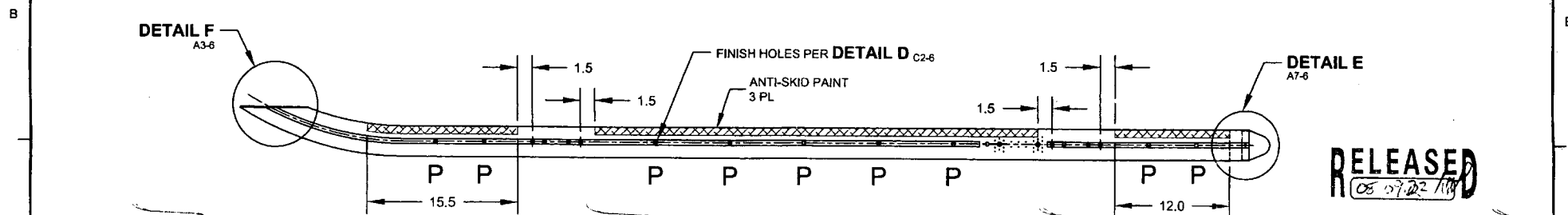
W/O FROST

RELEASED
08-07-23





F	DRAWING UPDATED TO CURRENT STANDARDS. SHT 6 ADDED. ALL SECTION AND DETAIL VIEWS TRANSFERRED TO SHT 6. SHT 1 IN PL PART D2649 QTY UPDATED. SHT 6 SECT C-C GRIND INSTRUCTIONS DELETED FROM NOTE 7 (SEE NCR 239).	AJS	08.08.08
E	REMOVE CBORE, CHG DRILL, ADD CHAMFER	CP	06.03.30
D	REDRAW; INCCORP. DEO9136/9153/9163 MOD GROUND HANDLING ON D2650-1/-3	CP	04.05.17
C	CHANGE HOLE PATTERN AND FRONT END	DS	97.10.29
B	AS MANUFACTURED CHANGES	DS	97.06.26
A	NEW ISSUE	DS	97.03.25
REV.	DESCRIPTION	BY	DATE
DESIGN	DS	DART AEROSPACE USA, INC PORT HADLOCK, WA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. F
MFG. APPR.		D2650	SHEET 1 OF 6
APPROVED		TITLE	SCALE
DE APPR.		206/407 SKIDTUBE ASSEMBLIES	NTS
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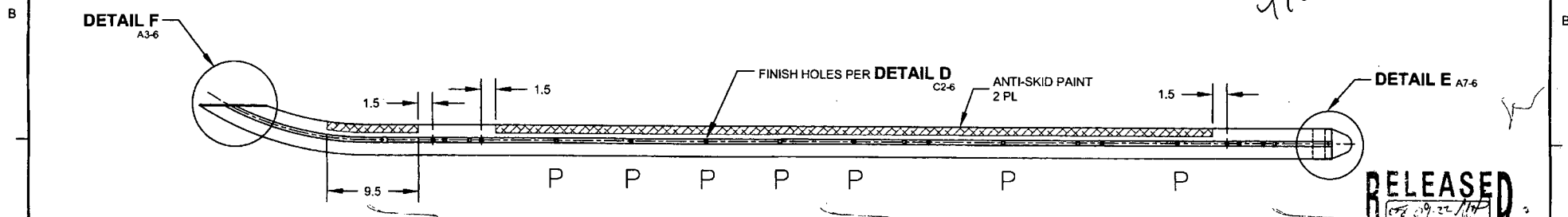
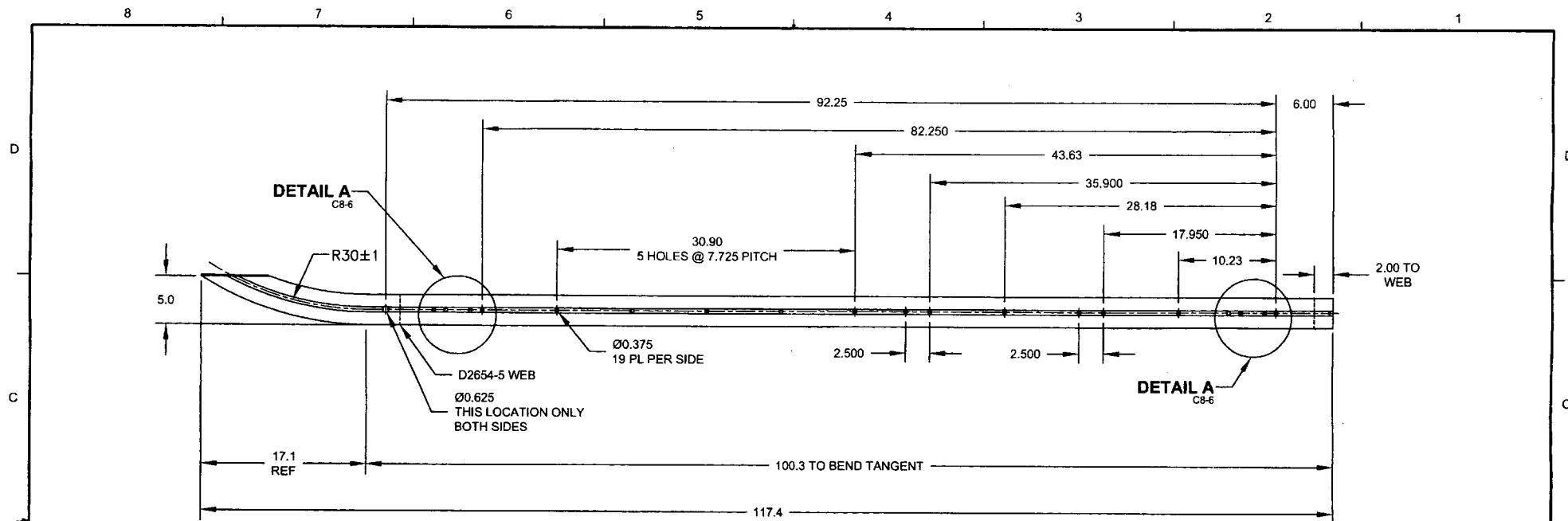
D2650-3 BENDING/DRILLING DETAIL



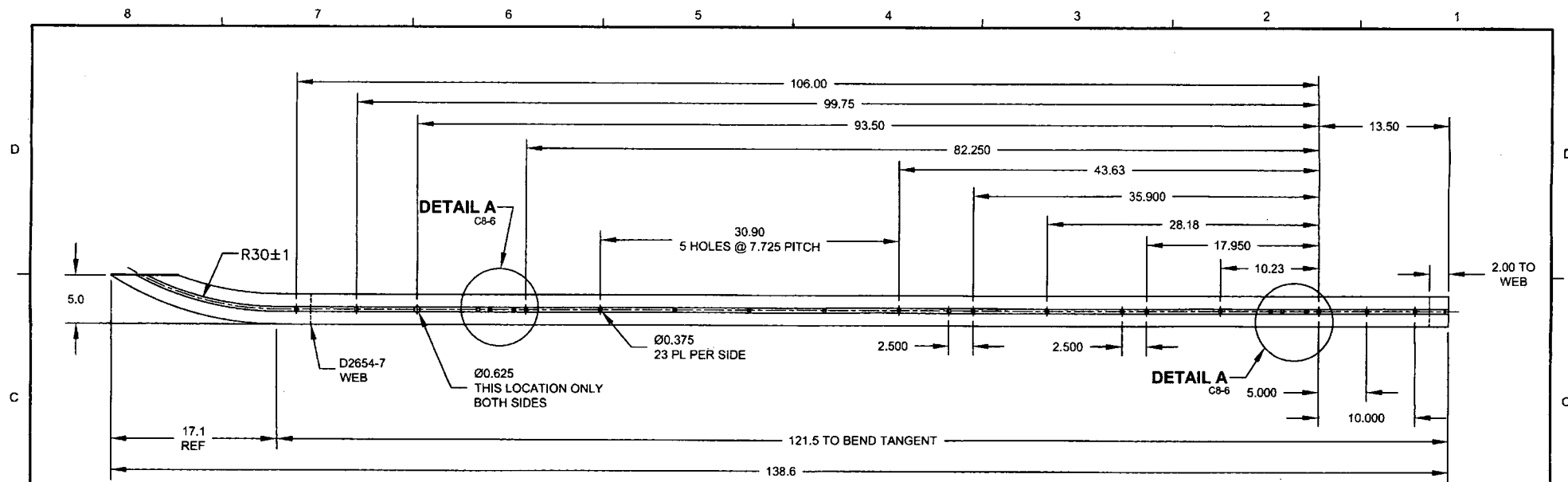
D2650-3 ASSEMBLY/FINISHING DETAIL

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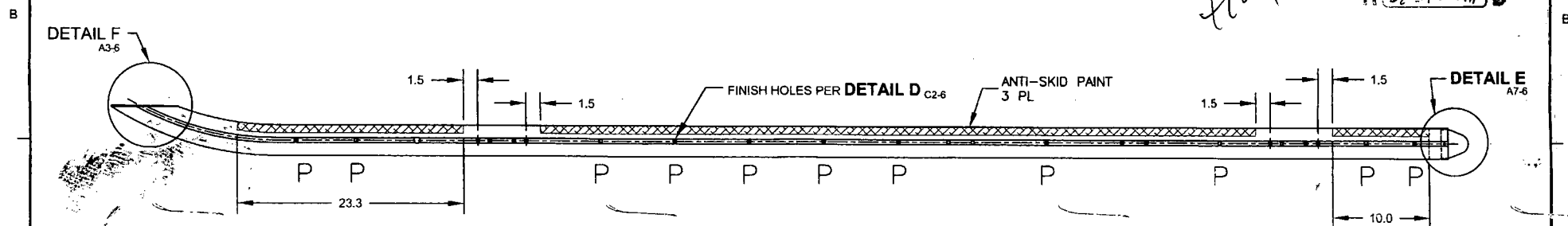
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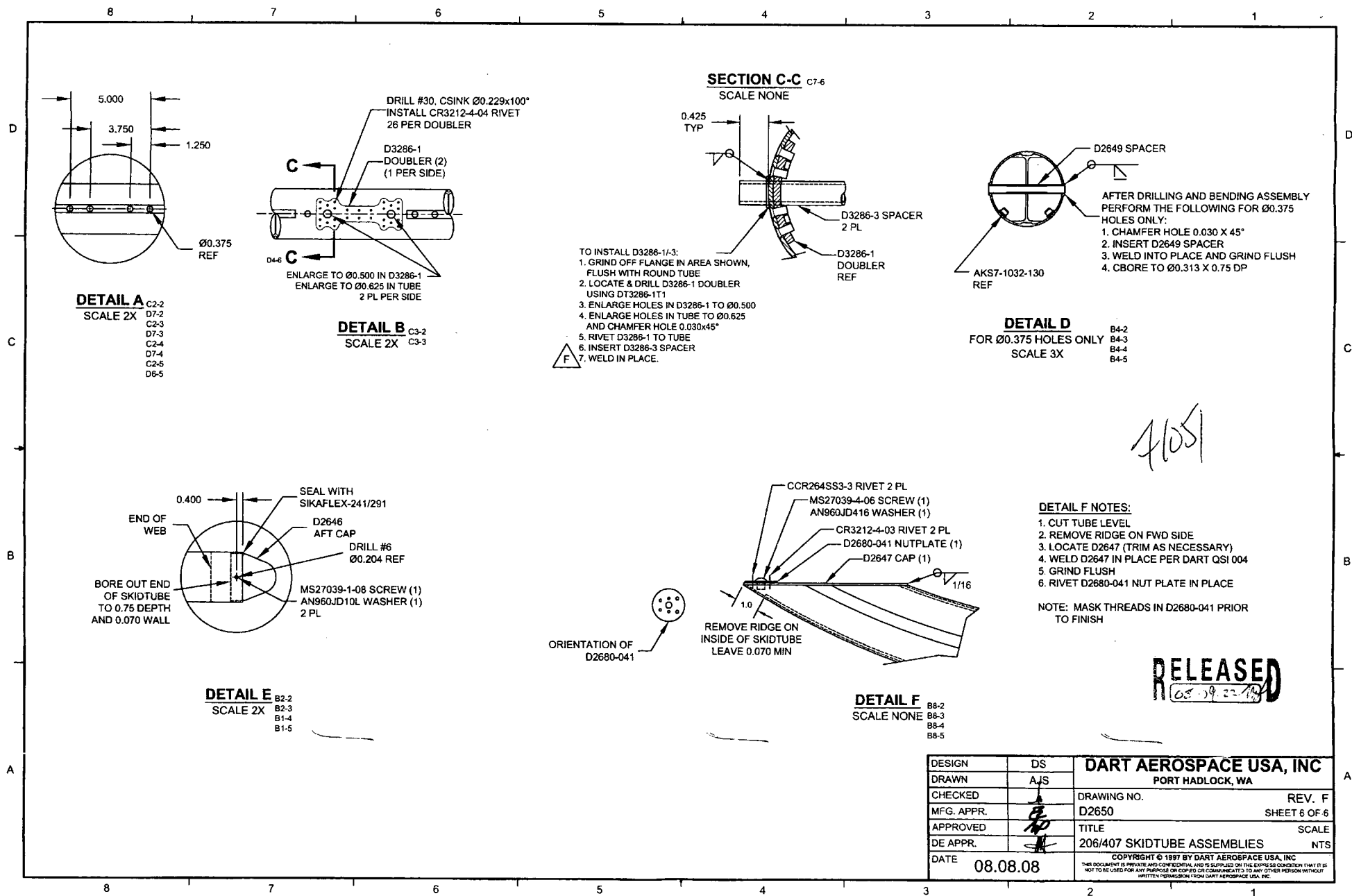
D2650-7 BENDING/DRILL DETAIL






D2650-7 ASSEMBLY/FINISHING DETAIL

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255
NO. ~~255~~

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliot
Job number: 69953
Part number: 3206 - 642 - 341
Description: 206
Welding Process: Tig ☒ Mig ☐
Base material: _____
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual: pass ☒ fail ☐
Penetration: pass ☒ fail ☐

UNACCEPTABLE

Cracks: pass ☒ fail ☐
Undercut: pass ☒ fail ☐
Pin holes: pass ☒ fail ☐
Overlap (cold lap): pass ☒ fail ☐
Porosity (surface): pass ☒ fail ☐
Coloration: pass ☒ fail ☐

Qualifier Ray Dunn Date of Test Coupon 11.06.14
Welder Barclay Elliot Date of Test Coupon 11/06/14

The above named individual is qualified in accordance with AWS D17.1.2001 to weld